

an optical fiber having a first end in light communication with the laser and a second end, wherein the second end of the fiber establishes a fixed reflector for reflecting a first portion of the light beam back through the optical fiber and for permitting a second portion of the light beam to propagate through the fixed reflector;

a seismometer mass for holding the fixed reflector to attenuate the propagation of vibrations to the fixed reflector;

a droppable reflector in light communication with the second end of the fiber for reflecting the second portion of the first beam back through the optical fiber; [and]

a detector in light communication with the first and second portions of the light beam for detecting interference fringes generated by the interaction between the first and second portions of the light beam[.], and

an elevator for holding the droppable reflector, wherein the elevator can be distanced from the droppable reflector to cause the droppable reflector to fall, and wherein the elevator gradually decelerates to gently contact the droppable reflector.

wherein the interference fringes are representative of the displacement of the droppable reflector relative to the fixed reflector.

Please cancel Claim 3, and amend Claim 4 to depend from Claim 2.

Please amend Claim 9 as follows:

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9.

(amended) An apparatus comprising:

a light source for generating a light beam;

an optical fiber optically coupled to the light source for transmitting the light beam;

a first reflector for reflecting the light beam from the optical fiber, the first reflector being positioned such that no relative motion occurs between the first reflector and the optical fiber;

a second reflector for reflecting the light beam from the optical fiber, wherein the second reflector can be selectively accelerated under the influence of gravity relative to the first reflector, and wherein reflected light from the second reflector interferes with reflected light from the first reflector to generate interference fringes; [and]

a light processor including a computer and positioned for receiving the interference fringes and determining the magnitude of the acceleration of the second reflector relative to the first reflector in response thereto[.]; and

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an elevator for holding the second reflector, wherein the computer controls the elevator and determines gravitational acceleration based upon the interference fringes.

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Please amend Claim 11 as follows:

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*Handwritten: 9*  
*Handwritten: 11* (amended) The apparatus of Claim 10<sup>9</sup>, wherein the light processor includes a photon detector, and [a]the computer is electrically connected to the detector.

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Please amend Claim 12 as follows:

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*Handwritten: 11* (amended) The apparatus of claim 1<sup>10</sup>, further comprising an evacuated chamber for holding the second reflector[ and an elevator for holding the second reflector, wherein the computer controls the elevator and determines gravitational acceleration based upon the interference fringes].

Please cancel Claim 24.

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